CLAIMS

1. An imaging apparatus, comprising:

a light source device;

an image pickup device for converting a living body observed image to video signals by using light irradiated from the light source device for observation; and

a processor for generating a living body image from the video signals,

wherein the processor has means for generating a living body image having at least a scattering feature of a living body tissue as image information.

2. The imaging apparatus according to Claim 1, wherein the image pickup device is an endoscope.

3. The imaging apparatus according to Claim 1, wherein the light source device irradiate at least one band light beam.

4. The imaging apparatus according to Claim 1, wherein at least one of the band light beams exists in a band positioned as blue light in a visual light wavelength range.

5. The imaging apparatus according to Claim 1, wherein the processor has means for estimating, from at least one living body image, spectrums corresponding to positions and/or an area in the image.

6. The imaging apparatus according to Claim 5, wherein the means for estimating the spectrums have at least one or

more matrix computers.

7. The imaging apparatus according to Claim 6, wherein a coefficient of the at least one matrix computer determines a range having spectrums estimated in a spectrum space with at least one discrete wavelength.

8. The imaging apparatus according to Claim 7, wherein a coefficient of the at least one matrix computer is designed by using a light propagation model expressing propagation of light in a scattering medium.

9. The imaging apparatus according to Claim 1, wherein the processor has means for estimating a scattering feature by a living body tissue from spectrums corresponding to positions and/or areas in an image.

10. The imaging apparatus according to Claim 9, wherein the means for estimating the scattering feature has means for performing regular projection on at least one predetermined vector in a spectrum space.

11. The imaging apparatus according to Claim 1, wherein the processor has means for generating a color image having a scattering feature by a living body tissue as image information.

12. The imaging apparatus according to Claim 11, wherein the means for generating the color image has means for generating a color image having an absorption feature by a living body tissue as image information.

13. The imaging apparatus according to Claim 11, wherein the means for generating a color image generates a color image by synthesizing a scattering feature image and the other images.

14. The imaging apparatus according to Claim 11, wherein the means for generating a color image generates an image and performs display control such that a scattering feature image and the other images can be displayed simultaneously and/or in a switching manner.

15. The imaging apparatus according to Claim 13, wherein images other than the scattering feature images are image information having absorption features by a living body tissue.

16. The imaging apparatus according to Claim 13, wherein images other than the scattering feature images correspond to images obtained under the illumination of white color.

17. The imaging apparatus according to Claim 1, wherein the processor has means for performing at least one spatial frequency filtering.

18. The imaging apparatus according to Claim 17, wherein the means for performing spatial frequency filtering is positioned in means for estimating, from at least one living body image, spectrums corresponding to positions and/or an area in the image.

19. A living body scattering imaging apparatus, comprising scattering feature computing means for calculating a scattering feature from a living body tissue image and image generating means for generating an image based on the scattering feature,

wherein, in a case where the living body tissue is modeled in two layers having a tissue surface layer and an internal layer other than the tissue surface layer, the scattering feature computing means calculates the scattering feature by applying a mapping of one or more image values or observation values based on the image values to a scattering feature space maximizing a change in scattering feature of the tissue surface layer under a condition minimizing an influence from a change in observation value occurring due to a change in optical characteristic of the internal layer.

20. The living body scattering imaging apparatus according to Claim 19, wherein the mapping is a linear mapping.

21. The living body scattering imaging apparatus according to Claim 20, wherein the linear mapping is calculated by multiple discrimination analysis in an observation value space and wherein an inter-class distribution and intra-class distribution in the multiple discrimination analysis correspond to a difference in scattering feature of the tissue surface layer and a

difference in optical characteristic of the internal layer.

22. The living body scattering imaging apparatus according to Claim 21, wherein the difference in optical characteristic of the internal layer includes a thickness, absorption characteristic and scattering characteristic of the internal layer.

23. The living body scattering imaging apparatus according to Claim 21, wherein the difference in scattering characteristic of the tissue surface layer is modeled by using changes in probability density distribution of a nucleus diameter included in a living body tissue of the tissue surface layer.

24. The living body scattering imaging apparatus according to Claim 23, wherein the model includes a Mie scattering model and a light propagation model.

25. The living body scattering imaging apparatus according to Claim 24, wherein the light propagation model is a Montecarlo model.

26. The living body scattering imaging apparatus according to Claim 21, wherein the intra-class distribution in the multiple discrimination analysis is estimated from the living body tissue image.

27. The living body scattering imaging apparatus according to Claim 26, wherein the estimation of the intra-class distribution is performed from an image of the blood

vessel running within a living body tissue.